

REMARKS

Claims 1-9 and 13-15 are pending in the application. Claims 1 and 10 have been amended hereby. Claims 10-12 have been cancelled, without prejudice or disclaimer. Claims 1 and 13 are in independent form. Favorable reconsideration is respectfully requested.

Reconsideration is respectfully requested of the rejection of Claims 1-11 under 35 U.S.C. §101, as being directed to non-statutory subject matter.

Claim 1 has been amended to recite that the method and the method steps are performed by a computer, and Claim 9 has been amended to recite “A computer-readable medium having instructions stored therein which when executed, cause a computer to perform the method according to claim 1.

Accordingly, it is respectfully submitted that Claim 1, and the claims depending therefrom, recite statutory subject matter, and meet all requirements of 35 U.S.C. §101.

Reconsideration is respectfully requested of the rejection of Claims 1-15 under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent No. 5,704,024 (“Voorhies”) in view of U.S. Patent Publication No. 2003/0112238 (“Cerny”).

Applicant traverses the rejections for the following reasons:

Initially, at a basic level, Voorhies discloses a technique for generating reflection vectors to index an existing environment map, such as a known cubic map. The independent claims of the present application relate to a different, earlier, stage in the process – in particular, to the generation of a new type of environment map itself. Therefore, Voorhies, at least, does not disclose the first line of Claim 1, nor does it disclose the last two lines of Claim 1.

Further, considering the alleged correspondence between the more detailed features of Voorhies and the present claims. The Office Action appears to be equating the “raw” reflection

vector (Rx, Ry, Rz) in Voorhies (col. 11, lines 41—32) to the “modified” reflection vector that is derived from it (col. 12, lines 24-28 and col. 13, lines 61-65). The Office Action also appears to be equating the “viewing direction vector” of Claim 1 to the Eye vector E in Voories; and the “folded vector” of Claim 1 to the modified reflection vector. Applicant disagrees with these alleged correspondences for the following reasons:

The modified reflector vector of Voorhies is derived as a vector product of E and the normal vector N, followed by some internal manipulation (dividing one or more vector components of the raw reflection vector by numbers derived from other vector components).

In contrast, Claim 1 defines the folded vector as follows:

- A. it “passes through the map origin” – this may have an analogy with the cubic and octahedral maps of Voorhies.
- B. it is associated with “an environment position in the three dimensional environment” for which Applicant sees no equivalent in Voorhies – because Voorhies is not concerned with generating map properties in respect of a 3-D environment.
- C. it lies in “a plane containing both the viewing direction and the environment position” – because there is no analogy in Voorhies to the environment position, this feature is not found in Voorhies.
- D. it forms “an angle with the viewing direction vector that is a predetermined function of the angle between the viewing direction vector and a vector between the map origin and the environment position” – because there is no environment position defined, this feature is not found in Voorhies.

E. it forms an association between a map position and the environment position – again, because there is no environment position defined, this feature is not found in Voorhies.

Therefore, it is respectfully submitted that most of the recitation of Claim 1, relating to the definition of the folded vector, is not found in Voorhies. If the Examiner disagrees, the Examiner is respectfully requested to specifically point to where in Voorhies the aforementioned features are found.

Looking in more detail at the allegations in the Office Action regarding the modified reflection vector of Voorhies, and in particular feature D as listed above:

The Office Action appear to equate the “predetermined function” (a multiplication function in Claim 2) to the multiplier 1325. However, the full recitation of Claim 1 is that the “folded vector forms an angle with the viewing direction vector that is a predetermined function of the angle between the viewing direction vector and a vector between the map origin and the environment position.” It is respectfully submitted that the multiplier 1325 merely provides a x2 function in the calculation of the expression $R = 2 * N * (N.E) - E * (N.N)$ (Voorhies col. 11, line 47), as such it is just a scaling factor in an arbitrarily selected equation – it is not a predetermined function relating the folded vector to the other quantities, as recited in Claim 1.

With respect to Claim 3, contrary to what is alleged in the Office Action that 1320 of Figure 11 in Voorhies is a multiplication by 0.5; it is submitted that 1320 multiplies E by $(N * N)$.

Looking at Cerny, again this is an arrangement for applying (rather than generating) an environment map. Figure 3 of Cerny shows a map origin (point P 305) and a relationship between a viewing direction (vector e, referred to as an observation vector) and a reflection

vector (vector r). That is all. It is respectfully submitted that there is no teaching of the sort that is alleged in section 8 of the Office Action.

Accordingly, it is respectfully submitted that independent Claims 1 and 13, and the claims depending therefrom, are patentably distinct over Voorhies and Cerny, alone or in any possible combination, if any.

In view of the amendments and remarks set forth above, this application is believed to be in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

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